

Remarks

Claims 28, 29, 32-48 are in the case. Claims 28, 33, 38 and 46 have been amended and claims 47-48 are new. Applicants have amended claim 28, 33, 38 and 46 and added new claims 47-48 to better describe the invention. Support for the amendment of the claims and the new claims may be found in the examples. As described in the previous response, a person skilled in the art would be able to calculate the mole percent "R" groups that are hydrogen for the applicable silicone resin. For example in Example 3, the silicone resin is $(\text{Me}_3\text{SiO}_{1/2})_{0.10}(\text{MeHSiO}_{2/2})_{0.19}(\text{PhSiO}_{3/2})_{0.71}$ where Me denotes methyl and Ph denotes phenyl. Mole% of R's that are Hydrogen = mole hydrogens/ moles all R groups = $((.19)(1))/((.1)(3) + (.19)(2) + .71(1)) = .19/1.39 = 0.137 (\times 100) = 13.7 \text{ mol\% of R's = H}$. Since claim 1 previously required "greater than 0.5 mole percent of the silicon-bonded R groups are silicon-bonded hydrogen atoms" and Example 3 has 13.7 mol% of R's that are hydrogens Applicants have clarified their invention by specifying at least 13 mole percent of the silicon-bonded R groups are silicon-bonded hydrogen atoms. Therefore Applicants respectfully request the Examiner enter all amendments and new claims.

The Examiner rejected claims 28, 29 and 32-43 under 35 U.S.C. §103(a) as being unpatentable over Asano US2002/0055563 in view of Saito US6,451,906 or Hatanaka US2001/0044484. According to the Examiner, Asano suggests blends of thermoplastics, liquid crystal polymer and silicone compound where the silicone compound has a branched structure and can be substituted with hydrogen, aryl, etc. In addition, the Examiner suggests that Saito teaches the amount of trifunctional groups should be 50-97% for flame retarding branched polysiloxanes and Hatanaka teaches trifunctional units above 60 %, low hydroxyl and alkoxy groups and 40-80% phenyl substitution. The Examiner then says "it would have been obvious to ensure Asano's polysiloxane has 40% branching, >40% phenyl substitution and low hydroxyl/alkoxy groups for the expected advantages." Applicants respectfully disagree. However, to further prosecution, Applicants have amended Claim 28 to require that at least 13 mole percent of the silicon-bonded R groups are silicon-bonded hydrogen atoms. Applicants examples show that the addition of a silicone resin having R groups which are only methyl, phenyl, or hydrogen and having at least 13 mole percent of the R groups being silicon-bonded

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hydrogen atoms provides better flame time than silicone resins having other types of R groups (see comparison example 1) or no silicon-bonded hydrogen atoms. Further, the Examiner stated that Applicants examples include other additives not required by Claim 28. Applicants would like to direct the Examiner to Examples 1-3 which do not contain any additional additives and do perform well with respect to flame time compared to the comparative examples. For the reasons provided above, Applicants respectfully request that the rejection under 35 U.S.C. §103(a) be withdrawn and the claims allowed to issue.

This response is being submitted within two months of the mail date of the office action and Applicants respectfully request the Examiner to enter these amendments and provide an advisory action as to the allowability of the claims as soon as possible.

This reply is being submitted within the period for response to the outstanding office action. Although the Applicants believe in good faith that no extensions of time are needed, the applicants hereby petition for any necessary extensions of time. You are authorized to charge deposit account 04-1520 for any fees necessary to maintain the pendency of this application. You are authorized to make any additional copies of this sheet needed to accomplish the purposes provided for herein and to charge any fee for such copies to deposit account 04-1520.

Respectfully Submitted,

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DC5009PCT

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Table 3

Ex.	Thermoplastic or Thermoset Resin Type (balance to 100 wt%)	Wt% silsesquioxane resin	Wt% Char Catalyst	Wt% Teflon 6C	Delta Avg HRR- Control	Delta Peak Heat Release	Delta Peak CO Release kg/kg	Delta Peak CO2 Release
7	PELLETHANE® 2355-75A	1	0.03	0.3	-110	-944	-0.0084	-3.835
8		1	0.00	0.0	-24	-768.5	-0.07255	-6.295
9		5	0.03	0.3	-692	-1443	0.28825	-0.805
10		5	0.00	0.0	-286.5	-690.5	-0.6248	-17.365
11		Virgin			0	0	0	0
12	CALIBRE® 200-22 (85%)	1	0.03	0.3	-478.5	-738	0.3825	7.025
13	CRASTIN® 6129 (15%)	1	0.00	0.0	-243.5	-630.5	8.9275	180.15
14		5	0.03	0.3	-535	-1013.5	0.3635	7.39
15		5	0.00	0.0	-437	-720	2.54675	61.74
16		Virgin blend			0	0	0	0
17	CALIBRE® 200-22 (85%)							
18	MAGNUM® (15%)	1	0.03	0.3	-1002.5	-521	0.195	2.6
19		1	0.00	0.0	-1405.5	-1638	1.0455	20.17
20		5	0.03	0.3	-1036	-657	2.4795	28.13
21		5	0.00	0.0	-189	-46	0.20545	4.72
22		Virgin blend			0	0	0	0
23	CRASTIN® 6129	1	0.03	0.3	-131	-585.5	-1.1642	-43.105
24		1	0.00	0.0	-2694	4200	-1.6595	-54.7
25		5	0.03	0.3	-1033	-1500	1.5329	-52.54
26		5	0.00	0.0	662	141.5	-1.375	-46.36
Comp. Ex. 5	AMOCO® 4018	Virgin			0	0	0	0
Comp. Ex. 6		1	0.03	0.3	514	57.5	-0.35315	-1.575
Comp. Ex. 7		1	0.00	0.0	233	768.5	8.11185	174.455
Comp. Ex. 8		5	0.03	0.3	1893	2125.5	-0.34365	1.745
Comp. Ex. 9		5	0.00	0.0	248.5	332.5	2.08335	35.585
		Virgin			0	0	0	0

The examples of the invention provide thermoplastics with excellent flame retardant behavior without the use of Polytetrafluoroethylene Powder (Teflon®) halogen-containing additives. Addition of Polytetrafluoroethylene Powder to the flame retarded compositions of this invention in some cases further improved the flame retardant and UL94 behavior of the compositions of this invention.